

## **1.0 INTRODUCTION**

### **1.1 ORGANIZATION OF THE REPORT**

This report describes the FCP site mission, cleanup program, and the RBES Vision for the regional context, the site context, and the hazard specific areas. The RBES document is divided into four major sections. Section 1 has provided an executive analysis of the FCP RBES Vision and a summary of the FCP site mission (past, present, and future), the status of the FCP cleanup program, and decision-making context. Section 2 describes the Regional Context RBES, Section 3 describes the Site Specific RBES, and Section 4 provides summaries of the specific hazards associated with the RBES for the FCP. Attached to the RBES Vision document is the Variance Report that summarizes the differences between the current agreements for Fernald's end state and the RBES Vision and several key Fernald RBES press articles.

The RBES Vision for the FCP will be depicted through maps, conceptual site models (CSM), and narratives. The RBES Guidance requires only the RBES associated maps, CSM, and narratives; therefore, no current state information is provided in this document. The RBES maps for the Regional Context, Site Context, and Hazard Specific Areas for the FCP are provided in this document and are described below. The setting for the RBES maps is the point in time when final land use is achieved and all long-term stewardship activities are in place, i.e., at the time of site closure. In addition, the RBES maps enable the graphical depiction of the hazards, their associated risks, and the affected populations or receptors.

The Regional Context maps place the FCP site within the context of southwestern Ohio. The Site Context maps encompass the FCP site and the lands immediately adjacent to the site. The Hazard Specific maps provide the most detail of the areas of the FCP site that contain hazards that may present risks to human health or the environment.

CSM are intended to communicate risk information to DOE managers, the regulatory community, and the public. CSM have been built, in block diagram form, to provide information regarding the hazards, pathways, receptors, and barriers (RBES only) between the hazards and receptors. A narrative statement accompanies each CSM to describe in detail the features of the model.

Linking the hazard specific maps to the CSM with supporting narrative will depict the path to be taken to complete the RBES in respect to the hazard areas of concern for the FCP site. Mapping contained in this report was completed by MSE Technology Applications Inc., located in Butte, Montana.

### **1.2 SITE MISSION**

The Fernald Closure Project (FCP) is located approximately 18 miles Northwest of downtown Cincinnati, Ohio. The FCP is owned and managed by the U.S. Department of Energy (DOE) and encompasses 1,050 acres. Fluor Fernald Inc., has been contracted by DOE to remediate and restore the FCP which is scheduled to be complete in 2006. Currently, the remediation of the FCP is approximately 60% complete (Table 1.1). Remediation activities are clearly visible at the site in the 140-acre former Production Area as the removal of the production facilities is near completion and remediation of the underlying soil is in process. Remediation of the 37-acre Waste Pit Area is also nearing completion and construction of the infrastructure required to support remediation of Silos (e.g., treatment facility) is in process. Borrow activities are also very visible in the southeast portion of the FCP and construction of the On-Site Disposal Facility is clearly visible in the eastern portion of the FCP.

The community of Ross is located a few miles northeast of the FCP. Immediately adjacent to the FCP site boundary are a combination of agricultural fields and residential housing. The southern and

eastern boundaries of the FCP are dominated by agricultural fields with some interspersed housing. The northern and western borders of the site are bordered by private residences and agricultural fields, although some small businesses and one industrial firm are also present. Some residential property along the western boundary has been recently converted to commercial property. Within a mile of the FCP, several areas of new residential development are being constructed. Overall, the currently status of the property surrounding the FCP is not expected to significantly change within the next few years.

In December 1984, when the Fernald Site was still in uranium production mode, the release of approximately 200 pounds of uranium from a plant dust collector was reported to the National Response Center. This release notification focused nationwide attention on the environmental issues at the Fernald facility and produced increased oversight by U.S. Environmental Protection Agency (EPA) and Ohio EPA. At about the same time, local residents at the site formed a watchdog group entitled the Fernald Residents for Environment, Safety and Health (FRESH). The high public and political profile surrounding activities at the site has remained relatively unchanged since the initial groundswell of attention in 1984.

Through the subsequent CERCLA field investigations, it became clear that Fernald's historical operations had affected a significant off-property land area. Soil concentrations of approximately 20 parts per million (ppm) for total uranium (about five times background) were identified in surface soil samples collected off property, immediately adjacent to the eastern and northeastern boundary of the facility. Uranium was detected at above-background concentrations (generally less than two times background) in a widespread area off the Fernald property. It was estimated that approximately 11 square miles of surface soil was impacted at these low concentrations. The source of these low concentrations was emissions of dust particles to the atmosphere from plant stacks over the Fernald site's 37-year production history. As documented in the Fernald CERCLA Baseline Risk Assessment, soil uranium concentrations of about 1.5 ppm above background correspond to an incremental lifetime cancer risk (ILCR) of about  $10^{-6}$  for a hypothetical residential/farming land use scenario (DOE, 1995a). In essence, the entire 11-square mile area of above-background contamination surrounding the Fernald site fell within the  $10^{-6}$  risk boundary identified during the Baseline Risk Assessment.

To facilitate environmental restoration, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) work scope for the Fernald site was divided into five operable units (OUs) each with the corresponding Records of Decision (ROD): Waste Pits - OU1 (DOE, 1995c); Miscellaneous Waste Units - OU2 (DOE 1995d); Production Area Facilities and Legacy-Waste Inventories - OU3 (DOE, 1994a & DOE, 1996a); Silos OU4 (DOE, 1994b); and Environmental Media OU5 (DOE, 1996b). CERCLA remedial investigations and feasibility studies are complete for each of the OUs, and five final Records of Decision (RODs) have been signed to establish cleanup levels and document the chosen cleanup remedies for each OU. Since the RODs were signed, field cleanup across all of the OUs has been the primary focus. Each RI/FS evaluation also contained a Comprehensive Risk Analysis and Risk Evaluation (CRARE). The CRARE was initially developed in conjunction with OU 4 and updated in each subsequent OU.

The Remedial Investigation/Feasibility Study (RI/FS) evaluations that supported each ROD considered risks to both on-site workers and off-site populations. The process of "risk-balancing" has been fully integrated into the remedial decisions outlined in each of the five RI/FS evaluations and RODs.

Through Fernald's five RODs, it was decided that the site's smaller volume of more highly contaminated material will be disposed off site and the larger volume of material with low levels of contamination that can be safely contained will be disposed on site. The OSDF is a result of this "balanced approach" to waste management at Fernald. Excavated soil and debris will be disposed in the OSDF, or if it does not meet the on-site WAC, at an off-site disposal facility.

### 1.3 STATUS OF CLEANUP PROGRAM

As of September 2004, cleanup is about 72% percent complete, based on total volumes of remediation waste that has been permanently dispositioned at the respective off-site and on-site disposal locations. A summary of the major remediation projects and their current status is provided in Table 1.1.

At the time that uranium production ceased at Fernald and the RODs were signed bringing an end to the CERCLA investigative studies, it was determined that there were approximately 3.1 million cubic yards of remediation waste that required action and approximately 134 acres of on-site and off-site groundwater contamination in the Great Miami Aquifer that needed to be addressed. A key factor in the site-wide approach to the cleanup remedies, considering the significant volumes of waste involved, was the need for an on-site disposal decision in order to cost-effectively address the large quantities of soil and demolition debris materials that would be generated. However, because an on-site disposal facility would need to be located over the Great Miami Aquifer (a regulated sole-source aquifer that serves as the principal drinking water supply in the region), waivers from State of Ohio solid waste disposal siting prohibitions were necessary to accommodate this need. In order to gain the above referenced waivers, the collective remedies approved by the regulatory agencies employed a "balanced approach" in which the higher volume, lower concentration materials would be allowed to remain on site (approximately 77 percent of the total). The lower volume, more heavily concentrated materials (23 percent of the total) were disposed of off site, and all affected portions of the Great Miami Aquifer were restored to full beneficial use.

Under this site-wide balanced approach, the final remedial actions selected in the original RODs include: Production-facility decontamination and dismantlement (D&D); On-site disposal of the majority of contaminated soil and D&D debris in an engineered 2.7 million cubic yard On-Site Disposal Facility (OSDF); Off-site disposal of the contents of the two K-65 Silos (Silos 1&2) and Silo 3; D&D and disposal of all Silos structures and infrastructure; Off-site disposal of all waste pit materials, caps, and liners; and Off-site disposal of the nuclear product inventory, containerized legacy waste inventories, and the limited quantities of soil and debris not meeting on-site waste acceptance criteria (WAC). The final remedial actions also included extraction and treatment of contaminated groundwater as necessary to restore the Great Miami Aquifer to full beneficial use, and achieve performance-based mass and concentration discharge limits for release of water to the Great Miami River as specified in the OU5 ROD (DOE, 1996a).

As of September 2004, the following cleanup benchmarks have been achieved:

- 818,663 tons of Waste Pits material have been shipped off site and 107 unit trains have made the round trip from Fernald to the Envirocare disposal facility in Utah;
- More than 1.77 million cubic yards of contaminated soil and debris has been excavated and placed in the OSDF;
- 7 of 8 individual disposal cells are in place;
- All 10 uranium production plants have been dismantled;
- 177 individual structures have been dismantled;
- Nuclear materials disposition is complete;
- 6.4 million cubic feet of low-level waste has been shipped by truck to the Nevada Test Site for disposal;
- 64 percent of the 1050-acre site footprint has been certified as meeting radiological and chemical cleanup levels; and
- 16 billion gallons of contaminated groundwater has been pumped and treated, as necessary, to achieve surface water discharge limits.

**Table 1.1. FCP Cleanup Program Status.**

Project	Work Scope	Status as of September 2004	2006 Strategy	Completion
Aquifer Restoration	<ul style="list-style-type: none"> <li>Remediate contaminated portions (approx. 170 acres) of the Great Miami Aquifer</li> <li>Treat stormwater and wastewater resulting from site remediation activities</li> </ul>	<ul style="list-style-type: none"> <li>Project - 66% complete</li> <li>Extracted more than 16 billion gallons of water from the aquifer since 1993</li> <li>Treated more than 10.5 billion gallons of water</li> <li>Removed more than 6,390 pounds of uranium from aquifer since 1993</li> </ul>	<ul style="list-style-type: none"> <li>Design and construct a Converted Advanced Wastewater Treatment Facility to complete aquifer restoration.</li> </ul>	2021
Building Demolition	<ul style="list-style-type: none"> <li>Dismantle 223 former production plants, support structures, and associated components</li> </ul>	<ul style="list-style-type: none"> <li>Project -- 70 % complete</li> <li>Dismantled 177 structures</li> <li>Completed Safe Shutdown in March 1999, two years ahead of schedule and \$7 million under budget</li> <li>Last production building dismantled May 2004.</li> </ul>	<ul style="list-style-type: none"> <li>Continue aggressive demolition of buildings and miscellaneous structures</li> </ul>	2006
Soil and Disposal Facility	<ul style="list-style-type: none"> <li>Remediate and dispose of contaminated soil</li> <li>Certify site as clean and perform natural resource restoration</li> </ul>	<ul style="list-style-type: none"> <li>Project 68 % complete</li> <li>Cell 1 – filled and capped</li> <li>Cell 2 – filled and capped</li> <li>Cell 3 – filled and capped</li> <li>Cell 4 – 92 % filled</li> <li>Cell 5 – 52 % filled</li> <li>Cell 6 – 42 % filled</li> <li>Cell 7 – 4% filled</li> <li>Excavated and dispositioned over 1.77 million cubic yards of contaminated soil</li> <li>Over 64 % of the site is certified "clean"</li> <li>Completed seven natural resource restoration projects</li> </ul>	<ul style="list-style-type: none"> <li>Adopt self-performance and aggressive approach to work</li> <li>Resequence work with more parallel activities</li> <li>Greater integration with D&amp;D and Waste Pit projects</li> <li>Add Cell 8 to accommodate scope increase</li> </ul>	2006
Silos 1 and 2	<ul style="list-style-type: none"> <li>Remove 8,900 cubic yards of low-level waste from two concrete silos</li> <li>Chemically stabilize waste and ship off site for disposal</li> </ul>	<ul style="list-style-type: none"> <li>Project - 68 % complete</li> <li>Construction is complete</li> <li>Accelerated Waste Retrieval Subproject – 100 % complete</li> </ul>	<ul style="list-style-type: none"> <li>Use commercial design-build approach to integrate project activities and accelerate schedule</li> <li>Implement a detailed constructability process to maintain required coordination of efforts</li> <li>Revise design to increase operating flexibility and reduce downtime</li> <li>Develop options for transportation and disposal</li> </ul>	2006

Project	Work Scope	Status as of September 2004	2006 Strategy	Completion
Silo 3	<ul style="list-style-type: none"> <li>Remove 5,100 cubic yards of low-level waste from one concrete silo</li> <li>Ship waste off site for disposal</li> </ul>	<ul style="list-style-type: none"> <li>Project - 78 % complete</li> <li>Construction is 100% complete</li> <li>Facility directed to hot standby with ability to initiate operations with two weeks notification.</li> </ul>	<ul style="list-style-type: none"> <li>Prepared ROD Amendment and Revised Proposed Plan to allow for treatment only as required to meet permitted disposal facility's waste acceptance criteria</li> </ul>	2006
Waste Pits	<ul style="list-style-type: none"> <li>Remediate the contents of six waste pits containing low-level radioactive waste byproducts of uranium and thorium processing</li> </ul>	<ul style="list-style-type: none"> <li>Project – 95 % complete</li> <li>128 unit trains pulling 7,609 cars have shipped 818,663 tons of waste</li> </ul>	<ul style="list-style-type: none"> <li>Operate dryers 24/7 to address increased waste tonnage</li> <li>Lease additional railcars</li> <li>Evaluate plans to reduce number of shipments to Envirocare</li> </ul>	2004
Waste Management	<ul style="list-style-type: none"> <li>Characterize, sample, package, and dispose of low-level radioactive, hazardous, and mixed waste site inventories</li> <li>Provide site-wide support for waste planning and off-site shipping</li> <li>Emphasize waste minimization, recycling or reuse wherever practical</li> </ul>	<ul style="list-style-type: none"> <li>Project - 99% complete</li> <li>Shipped 6.6 million cubic feet low-level waste to the Nevada Test Site for disposal – 100 % complete</li> <li>Shipped 163,912 low-level liquid mixed waste off site for incineration – 93% complete</li> <li>Transferred 595,266 cubic feet low-level waste to Waste Pits Remedial Action Project – 99 % complete</li> <li>Transferred 792,510 cubic feet low-level waste to OSDF – 100% complete</li> <li>Shipped 56,127 cubic feet low-level mixed waste off site for treatment – 98% complete</li> <li>Dispositioned all containerized waste on Plant 1 Pad</li> <li>Approximately 270 containers remaining in inventory</li> <li>Continue characterization, visual inspection, and packaging of uranium waste</li> </ul>	<ul style="list-style-type: none"> <li>Maximize on site disposition of low-level waste</li> <li>Pursue off-site treatment of mixed waste and low-level waste</li> </ul>	2004

Project	Work Scope	Status as of September 2004	2006 Strategy	Completion
Nuclear Material Disposition	<ul style="list-style-type: none"> <li>Characterize, package, and ship nuclear materials off site</li> </ul>	<ul style="list-style-type: none"> <li>Project – 100% complete</li> <li>Dispositioned 31 million pounds of nuclear product through: <ul style="list-style-type: none"> <li>Transfer to other DOE site for programmatic use</li> <li>Sale to private sector</li> <li>Transfer to Portsmouth Facility for interim storage under DOE's Uranium Facility Management Group (9.1 million net pounds transferred since June 1999)</li> <li>Burial of Department of Defense materials off site</li> </ul> </li> </ul>		2002

As the above metrics serve to illustrate, the Fernald cleanup is mature and the site is on target for a baseline closure in March 2006. Upon closure in March 2006, all that will remain will be the ongoing actions necessary to achieve final cleanup of the Great Miami Aquifer restoration and the long-term stewardship activities necessary to accommodate and maintain the designated final land use. At closure, approximately 975 acres of the site property will be restored to permit beneficial use as an Undeveloped Park (the selected final land use objective), and approximately 75 acres will be dedicated to the footprint of the OSDF. Other than the disposal facility, no sources of contamination above the site's final remediation levels (FRLs) will remain on site when cleanup is complete.

### **1.3.1 Regulatory and Stakeholder Inputs Received to Date**

This document has been prepared pursuant to the DOE Guidance for Developing a Site-Specific Risk-Based End State Vision (DOE, 2003a). The future mission for Fernald will be Legacy Management of the areas of concern left on site. The decisions concerning the final list of hazards to be left on site, will be evaluated collaboratively with the participation of the FCAB, EPA, and Ohio EPA.

During October 2003, initial meetings were held with the FCAB and the Regulatory Agencies to identify issues of concern with the changes that may be contemplated under the RBES Vision. It was clear from the initial interactions that the FCAB and the Regulators have significant concerns with the changes outlined in this RBES Vision/Variance. The FCAB and agencies also raised concerns that the RBES process could create distractions and resource demands that ultimately detract from achieving the 2006 closure schedule if not managed wisely, considering the progress of remediation already being made in the field.

To illustrate the type of issues and concerns that are currently on the minds of the local and political community regarding emerging changes for the FCP, comments and correspondence are included in Attachment B to this document:

- An October 9, 2003 congressional letter, signed by Ohio senators and congressmen, raising concerns with the Comprehensive Groundwater Strategy Report (DOE, 2003b) and potential changes to existing cleanup agreements;
- A series of articles concerning the RBES Process, Groundwater Strategy Report and DOE's decision-making process for arriving at changes to cleanup agreements.
- A summary of the public comments received at the November 18, 2003 public meetings;
- A series of letters providing comments on the Fernald RBES process from the Agencies and Stakeholders.
- Selected DOE responses to comments and letters received on the RBES Vision and process.

The information contained in the above listed items illustrate the overall public and regulatory attitude toward any changes to the current remedies contained in the site's five RODs.

In a letter to the stakeholders dated January 9, 2004, DOE requested major specific comments by January 20, 2004 and detailed technical comments by March 15, 2004.

Additional comments were received and have been included in Attachment B. Attachment B has been modified to include a comment response section in an attempt to capture the comments received and place them into major groupings or categories and to respond to these comments.

Originally the final version of the RBES Vision Document was to be submitted to Headquarters (HQ) on March 30, 2004. In a memo dated March 18, 2004, Headquarters stressed the importance of public input into the process and asked for a proposed schedule for the sites as to when they would be submitting the next or final version of the document. The FCP replied, they would submit the final version within 2 weeks of formally receiving HQ comments.

On April 6, 2004, the Ohio Field Office Manager, received a memorandum from EM-1 containing general comments, indicating that more detailed HQ comments were following and extending the final submission date to September 1, 2004. Detailed HQ comments were received at the FCP on April 16, 2004. The HQ's comments were reviewed and appropriately incorporated.

Additional HQ comments were received on April 1, 2004. These comments were reviewed and incorporated on June 15, 2004. Minor clarifying comments were received from HQ on June 28, 2004. These comments were addressed and incorporated into the document on July 16, 2004. On July 16, 2004 the FCP was notified of a National Workshop to be held in Chicago on October 5 and 6, 2004. The FCP was notified not to submit the final draft document until after the workshop.

A request was made for DOE-FCP to conduct an informal public meeting on the End-State Document prior to final submittal to HQ. This request was granted and a meeting was held on November 16, 2004.

As of this writing, the FCP anticipates submittal of the Final Draft End-State Document to EM-1 by December 1, 2004.

### **1.3.2 Fernald's Decision-Making Context (Based on Previous Risk-Based Remedy Decisions)**

To assist the DOE and the community with the decisions being contemplated under the CERCLA cleanup process, the Fernald Citizens Task Force (now known as the Fernald Citizen's Advisory Board, or FCAB) was formed in the early 1990s to make recommendations regarding land use objectives, residual risk levels, and to help develop an approach to navigating the technical and political considerations surrounding the need for an on-site disposal alternative. At the time the remedial decisions were being contemplated, there was little dispute over the need to remove, treat, and/or dispose of the source materials from the source OUs themselves. Likewise, there was little dispute over the need to restore the Great Miami Aquifer to full beneficial use. The cleanup of the contaminated soil posed a difficult management problem because of the following: The large volumes and acreages of contaminated material with associated high costs of cleanup; The risk presented by contaminated soil is real but the harm is seldom imminent; The technology for treating soil is often imperfect; and The materials that are removed during cleanup must be disposed somewhere and no place is eager to host them. The complexity of this management problem was noted by the FCAB in their deliberations

The strategy for finalizing sensible soil cleanup levels (and the resultant extent of soil excavation) involved a process of consensus building with local residents, EPA, Ohio EPA and DOE, and in marrying the CERCLA decision process with the deliberations of the FCAB regarding land-use based final cleanup levels. At the time of the FCAB deliberations, the 11-square mile area represented an excavation volume of nearly 10 million cubic yards, if a  $10^{-6}$  risk target (5 ppm total uranium) were to be selected as the land-use based final soil cleanup level. Present-worth cost estimates for such an excavation effort, when coupled with the Great Miami Aquifer restoration remedy, approached more than \$4.3 billion dollars. The FCAB's deliberations and educational efforts with the community helped them understand the



short- and long-term risk evaluations and tradeoffs involved, effective consensus building led to the selection of a 50 ppm total uranium off-site soil cleanup level (corresponding to a  $3.5 \times 10^{-5}$  ILCR and Hazard Index (HI) of 1.0 for non-carcinogenic health effects) as the appropriate risk-based value. When coupled with the on-site disposal decision for contaminated soil and debris, this decision reduced present worth costs from an estimated \$4.3 billion as mentioned above, to a more realistic \$580 million. Equally as important, the decision reduced the area of excavation to approximately 400 acres, down from the potential 11-square miles previously under consideration. It is important to note that the above listed decisions were endorsed by the FCAB, in conjunction with EPA and Ohio EPA.

Also, during the solicitation of community input for the remedy decisions, it became clear that virtually no Stakeholders or members of the public were interested in seeing the on-site area of Fernald returned to an unrestricted residential/farming land use following remediation. From this basis, and on the recommendations of the FCAB, EPA, Ohio EPA, and DOE collectively agreed to adopt what was known as Land Use Objective No. 3 (a restricted, non-farming land-use objective) for the setting of sensible on-site soil cleanup levels. Individual constituent cleanup levels for a designated hypothetical Undeveloped Park receptor were then set at an ILCR of  $10^{-6}$  and a HI of 0.2. These target values, recognizing other non-farming land uses (e.g., commercial, industrial, and developed park) could be possible for the site in the future while meeting the corresponding land use-specific risk range targets ( $1 \times 10^{-4}$  to  $1 \times 10^{-6}$  ILCR and HI=1) considered acceptable by EPA in the National Contingency Plan. These deliberations and the consensus building resulted in the selection of Alternative 3A from the Fernald OU5 Proposed Plan (excavation of contaminated soil and placement in an engineered on-property disposal facility to achieve on-site Undeveloped Park risk-based levels) as the preferred remedy for the site. The final cleanup decision provided a health-protective remedy that is reliable over the long term, yielded the lowest overall short-term risks, and is less costly when compared to the other alternatives (DOE, 1995b). This consensus risk-based decision was then documented in the January 1996 OU5 ROD (DOE, 1996b).

### **1.3.3 Opportunities and Challenges Facing Future RBES Decisions**

As the above background discussion illustrates, the FCAB, in conjunction with local Stakeholders and the Regulatory Agencies, plays a vital role in making the key collaborative Fernald decisions that are risk based and/or final land-use focused. The FCAB also plays a pivotal role in gaining public consensus and educating local public members in the short- and long-term tradeoffs involved in CERCLA remedial decision-making. During recent meetings on Fernald's RBES opportunities, both the FCAB and the Regulatory Agencies strongly pointed out that the risk-based decisions already reached for the Fernald site to arrive at the original cleanup remedies, sensible soil cleanup levels, and land-use preferences have already produced a solid "RBES Vision" for Fernald that, in their mind, requires little further tailoring.

In recognition of this backdrop, it was agreed in concept during the initial dialogue between DOE and its Stakeholders and Regulators that the FCAB would serve as the primary deliberative body for gaining public consensus on acceptable new risk-based initiatives emerging from the RBES Vision. EPA and Ohio EPA (who also sit on the FCAB) would serve as the primary deliberative organizations for determining the regulatory acceptability of the new initiatives, should they require revisions to existing cleanup agreements and/or implementation requirements. Through the collaborative interactions with these primary bodies, the aggressive master list of technically supportable initiatives will be screened for further applicability to arrive at the final shortlist of viable initiatives that can be implemented beneficially given the present status and remaining timetable for the cleanup remedies underway.

Significant ongoing dialogue with the FCAB and the regulatory agencies concerning the RBES deliverables occurred in early October 2003. The RBES policy was an agenda topic at the FCAB's annual retreat, and was the subject of a quarterly FCAB meeting on October 21, 2003. Individual meetings with

local stakeholder groups, such as FRESH, have been held, along with the featuring of the initiatives during monthly Fernald Cleanup Progress Briefings held for the local public. At the October 21, 2003 FCAB meeting, a consensus was reached between DOE and the FCAB regarding the ongoing interactions that will be necessary to move into the shortlisting process for the initiatives. A public meeting on the RBES process was held on November 18, 2003. A general letter to Stakeholders was also issued announcing the November 18, 2003 public meeting and asking for input and participation in the RBES process. Feedback received from the Regulatory Agencies, indicates that they are unwilling to support any of the RBES initiatives contained in this report. Additional discussions are planned in the coming months, particularly pertaining the groundwater scenario as described below. It has been agreed that Fernald would continue to follow the same level of deliberative processes employed during the original CERCLA decision-making (and subsequent ROD changes already in place) in the future consideration of changes to the current plan.

In light of Fernald's decision-making landscape and the RBES interactions already underway, a summary of the master list of technically supportable opportunities that are contained in the RBES Vision, are provided in the bullets below. These opportunities were all identified in the September 2003 timeframe, for inclusion in the Vision.

- Allow use of an area averaging and hot-spot approach for OSDF soil WAC demonstration (just like soil cleanup standards). Currently, a "not to exceed" approach is required by the OU5 ROD (DOE, 1996a).
- Use the Fernald sediment cleanup levels in all streams and ponds on site. Currently, these levels are limited to the Great Miami River and Paddys Run.
- Use the cross-media aquifer protection soil cleanup levels for subsurface soils (below 3 feet) rather than the surface soil cleanup levels.
- Allow Fernald's new outfall line to be cleaned and left in place.
- The D&D concrete debris from select remediation structures that were installed clean will be certified clean and used as clean, hard fill in select deep excavations.
- Discharge OSDF leachate that meets surface water cleanup levels to on-site ponds, rather than requiring the leachate to be automatically treated before discharge.
- The AWWT facility will be shut down, undergo D&D, and be disposed of in the OSDF, along with the underlying, impacted soil, by the Site Closure date of June 30, 2006. The most cost-effective infrastructure to support groundwater remediation post 2006 closure will be identified and installed to replace the AWWT.

All of the above listed opportunities would change Fernald's end-state residual contaminant levels under current cleanup agreements. All of the opportunities can be technically supported under a risk-based decision-making concept. These opportunities are presented in detail in the RBES Vision so that the variances between the opportunities and current cleanup agreements, along with the cost/benefits, can be identified and evaluated by Fernald's decision-making participants.

Outside of the RBES process, ongoing improvements to the remediation processes, which do not change the residual risk level or end-state condition of the site, are constantly being identified, developed, and pursued under the normal CERCLA process with Fernald's Stakeholders and Regulators. This process

has been in place since the RODs were signed and has been successful in shortening the cleanup schedule and reducing costs, while maintaining the short- and long-term level of protectiveness to the environment consistent with the agreements in place. This mature and time-tested process remains in place and will continue to be utilized to review new improvements that are identified throughout the remainder of the cleanup effort.

#### **1.3.4 Lessons Learned Regarding RBES Decision Making – Groundwater-Based Opportunities**

One of the requirements of the 2003 Fernald Closure Contract Modification Number M038 is the need to identify the most cost-effective groundwater infrastructure to remain at the site when the other baseline work elements defining Site Closure are complete at the end of June 2006. Since the full restoration of the Great Miami Aquifer will occur to the same end state sometime after 2006 regardless of the treatment/infrastructure decisions being contemplated under Modification M038, the decisions are technically not a RBES Vision opportunity. Fernald is engaged with the FCAB and the Regulatory Agencies regarding the options for the D&D of groundwater treatment infrastructure in time for the resultant surface and subsurface soil and debris to be placed into the OSDF before that facility permanently closes.

In early October 2003, an internal working draft of DOE's Comprehensive Groundwater Strategy Report was shared with the FCAB, local Stakeholders, and the Regulatory Agencies, outlining a number of major groundwater treatment alternatives for consideration including the regulatory relief that may be necessary from existing cleanup agreements for each alternative in order to achieve the objectives contemplated (DOE, 2003b). Follow-up discussions with Stakeholders were held as part of the December 2, 2003 FCAB meeting. An additional public meeting was held on January 13, 2004 to provide a "toolbox" to Stakeholders to clarify the alternatives outlined in the Groundwater Strategy Report. Excerpts from the "toolbox" are provided in Appendix C.

It was agreed that Fernald would continue to follow the same level of deliberative processes employed to date in the future consideration of any changes in the current plan for groundwater and wastewater treatment, and the possibility of the early D&D of existing water treatment facilities. This agreement was similar to the consensus reached at the October 21, 2003 FCAB meeting regarding RBES Vision opportunities.

At a February 18, 2004 FCAB Groundwater "tool box" meeting, DOE presented the concepts behind a smaller replacement water treatment facility to replace the AWWT Facility for use for the long term. As a result of US and Ohio EPA comments related to the smaller system, the decision was made to add an additional 600 gpm to the system to address long-term uncertainties in the water treatment needs.

On March 10, 2004, a fact sheet was sent to the regulators and key stakeholders proposing to modify the AWWT facility to retain 1800 gpm of the existing 2600 gpm capacity. This would allow early D&D of 90% of the existing AWWT footprint (soil and debris) and placement into the on-site disposal facility. This alternate treatment initiative would not require formal changes to the OU5 ROD or associated regulatory permits. In a letter dated March 10, 2004, the FCAB endorsed (with comments) the proposal to replace the existing AWWT with a smaller facility.

In a letter dated April 30, 2004, DOE-FCP responded to the FCAB letter of March 10, 2004, addressing the path forward for obtaining regulatory concerns related to the groundwater initiative.

On May 5, 2004, DOE-FCP transmitted a letter to U.S. EPA and Ohio EPA documenting discussions and agreements on the path forward and technical implementation of “conversion” of the AWWT. On May 17, 2004 and June 3, 2004, the U.S. EPA and the Ohio EPA respectively, sent letters to the DOE-FCP approving the conversion of the AWWT. On June 1, 2004 a draft Fact Sheet to the Operable Unit 5 ROD was submitted to the Agencies to formalize this change. The “Fact Sheet” was finalized and transmitted to the Agencies on July 20, 2004. A postcard announcing the availability of the Fact Sheet was transmitted to 884 people on July 23, 2004. The Fact Sheet was discussed at the August 3, 2004 full meeting of the FCAB.